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Rail Road News.

Cheap Railway Fares in England.

The London and Northwestern railway company are carrying out some "extensive experiments" in the way of a reduction of fares, with a view of testing the productivness of the local traffic. Hitherto the price of day tickets, for certain distances, has been one-third less than two fares, a further reduction upon which, to the extent of one-sixth has been made. The Midland Company have also reduced their fares, and have assimilated them to, and have adopted, the scale on the Great Northern Railway. The great problem of the age with regard to the profit of railway investments, is to determine what rate of fare will secure the largest revenue. It has been demonstrated, that on the English railways four fifths of the gross revenue comes from passengers at one penny or two cents per mile, and that, invariably, the number of passengers has fallen off, and the receipts have decreased whenever the rates have been raised. The commission formed by the British Parliament to inquire upon this and other pertinent subjects, reported a mass of evidence in favor of low fares that no reasonable man could resist, and some of the English companies propose to give the low fare system a trial upon the most radical scale. We are rather fearful they may not persevere for the length of time necessary to give the system a fair trial. The proper mean is the thing to be arrived at.

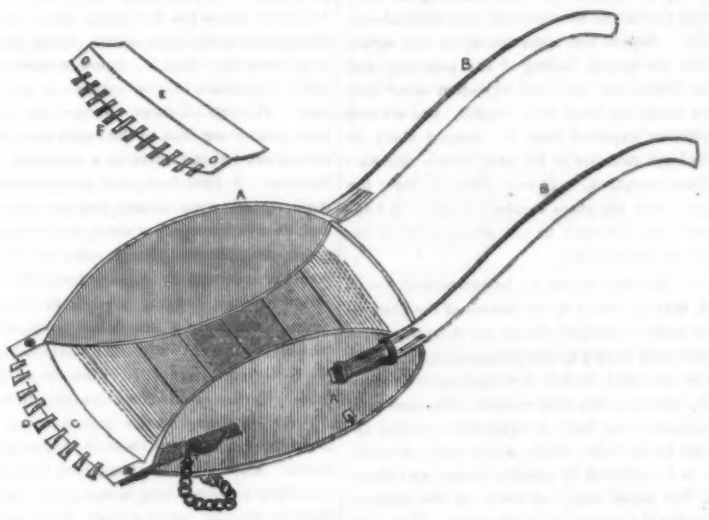
New York and Erie Railroad.

The Buffalo Courier says—"We are informed by Mr. C. Story, who last winter ably represented, in part, the county of Dutchess, in the Assembly, and who is now doing some of the heaviest, if not the heaviest work on the Erie Railroad, that the entire balance of the line, from Corning to Dunkirk, will be finished and in complete running order, on the first day of May, 1851. Mr. Story's contract covers the most formidable work to be done. It is twelve miles in length. He is now working one thousand men, daily, and is about to put on five hundred more. Every section is under contract, and is being prosecuted with the utmost vigor. Another season will therefore witness the effect which this route will have upon the vast tide of travel flowing from the west.

It has been announced that Mr. Sellers, of Cincinnati, has been appointed Mechanical Engineer of the Panama railroad, to reside in this city. The company propose to complete the work to Gorgona by June, 1851, and the whole in two years. The road will be first laid to Chagres on pile, to be filled with the excavations on the line. The rail is to be made of wood found along the line, so hard that it is difficult to work it by common tools.

The passage of the Texas Bill, giving her ten millions, will enable her to pay off nearly her whole debt. We hope her citizens will then invest considerable in plank, or railroads.

SWEET'S PATENT EXCAVATING SCRAPER.

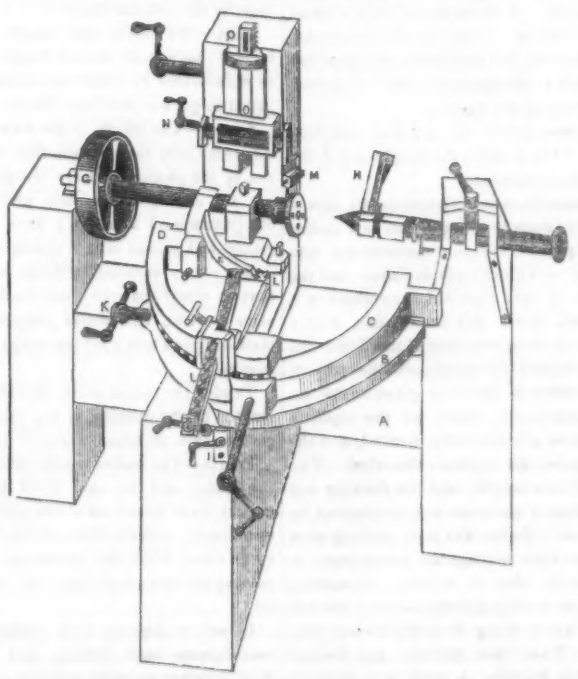


This scraper is the invention of Mr. Joseph Sweet, of Hughesville, Lycoming Co., Pa., who has a patent for the improvement. The distinguishing feature of this invention is the introduction of moveable teeth on a circular surface, the teeth being in condition and number adapted to the condition of the soil in which the excavator is used. The sides of it may be made of wood or metal as represented by A A. B B are the stilts or arms, C is the moveable mouth piece with the teeth D. The teeth on the mouth piece of the excavator, are broad and flat in front, capable of plowing up in gravelly soil: the teeth, F, in the detached mouth piece E, are narrower at the extremities and are adapted to excavating in stiff and clayey soils. This excavator can be used in all soils, and it is particularly adapted to obviate entirely the use of a plow in stiff soils. It is useful in making roads, for levelling, digging ditches, canals, cellars, railroads, and other kinds of excavations. It is made strong and durable, and the price of one we believe is $8. We have seen some strong testimonials respecting its good qualities, given by those who have used it.

This scraper has just been awarded a diploma at the State Fair. Remember that it is an Excavating Scraper, with moveable teeth.

More information may be obtained by letter addressed to Mr. Sweet.

EVERETT'S WOODEN BOWL TURNING MACHINE.



This is an improved machine for turning wooden bowls. It is constructed to alter the shape or thickness, and it will turn seventy feet of bowls per hour. It is easily kept in order, and its simplicity is one of its peculiar traits. The bowls made by it are wonderfully smooth and perfect in form.

A is part of the frame; B is a moveable bottom, and is moved by the screw handle, I. C is a semi-circular frame placed on the top of the movable bottom; it is moved by the screw handle, K, at right angles with the direction of the movable bottom; D is a reciprocating frame turning on a pivot, which is connected with the semi-circular frame, C; it is moved by the large crank handle in front, the shaft of which has a pinion on it, which takes into a cog rack on the underside. The cutter arms, E, are attached to this frame; in the said arms are set the spurs and cutters, L, to cut the bowl from the block of wood, which is screwed to the chuck, F. The apparatus for cutting the outside of the block is also attached to this frame. H is the stock, in which a plane iron is placed for shaping the bottom of the bowl. G is a driving pully of the spindle. The flat part of the block, which forms the top of the bowl, is first turned off by the cutter, M, which is moved up and down by a rack and pinion, Q, operated by the crank handle, N; the frame, D, is then adjusted to the block by the screws, K and J, (turned letter,) and the outside of the block is shaped by the cutting apparatus, H, the cutter of which is brought against the block by a screw; the cutter arm, E, with its cutter, is then placed in the frame, D, and by turning the large handle in front, the cutters are pushed into the centre, forming the bowl, which is then taken off, and another, a size less, is placed upon the reciprocating frame, and another bowl taken off, and then another, till the block is used up.

The inventor of this machine is Mr. Addison Everett, of Middlefield, Mass., who secured a patent for the same on the 30th of last July. He has spent several years in bringing it to its present state of perfection, and encountered many difficulties, like all original inventors. After his machine was in operation as a fixed fact, though not abandoned to the public, an inferior machine was got up and patented by one of his neighbors, which proved to be some obstacle to Mr. Everett's success, who wisely purchased the whole right, and is now the proprietor of his own patent as well as assignee of the other. The invention is well secured against all infringement. This machine will supersede the tedious process of hand turning, and it saves about one-third of the timber; the bowls are smooth and not liable to split; hard or soft wood can be used. The bowls can be made half an inch thick, or any thickness required, and as the demand for wooden bowls in every part of the world is almost unlimited, the use of Mr. Everett's machines will form a profitable item in the statistics of our country.

Useful Receipts.

Gravity.

A heavy body falls through 15,0954 feet in one second in the latitude of London, in a vacuum at the level of the sea; the double of this quantity, or 30.1908 feet, is the measure of gravity at that place. At Paris, under the like circumstances, the fall of a heavy body is 4.90434 metres, or 16.0906 imp. feet; and the measure of gravity 9.80867 metres, or 32.1812 imp. feet.

The spaces described in different times by a falling body, are to each other as the squares of the times from the beginning of the descent; or, which produces the same result, they are as the squares of the velocities acquired at the end of those times.

Gravity and specific weight are not always interchangeable terms—gravity being a power of which weight is the effect.

To find the Tonnage of Ships.

Rule 1. Multiply the length of the keel, taken within the vessel, by the length of the midship beam, taken also within, from plank to plank, and that product by half the breadth, taken as the depth; then divide the last product by 94, and the quotient will give the tonnage. If the length of a ship's keel be 80 feet, and the midship beam 30: required the tonnage,—Ans. 385.9787 tons.

We have a number of communications awaiting attention. Owing to the extent of our index, the best we have ever got up, some communications are laid over until another period.

Miscellaneous.

History and Construction of the Thermometer.

(Continued from page 403.)

PRECAUTIONS NECESSARY TO BE OBSERVED IN CONSTRUCTING ACCURATE THERMOMETERS.

A general idea has been already given of the mode of constructing a thermometer, but where so much accuracy is required, there are many niceties that demand attention.

1. The tube should be of equal diameter throughout the whole stem. As obtained from the glass house, the tubes are in reality frusta of very elongated hollow cones, which by extension, become more or less nearly cylindrical, and as the divisions of the scale are usually equal, it is very important that the tube should not perceptibly differ from a true cylinder.

For these purposes, after a tube has been chosen by the eye as equal in calibre as possible, the best makers blow a bulb on it, and introduce a short column of mercury into the stem, perhaps an inch in length, which is accurately measured on a fine scale of equal parts in different portions of the tube, as the column is, by the heat of the hand, moved from the bulb to the open extremity of the tube. Should the mercurial column subtend the same number of divisions on the scale in every part of the tube, it may be considered as a perfect tube for the thermometer.

The late Mr. Wilsen, of Glasgow, introduced thermometric tubes of an eliptical bore. The advantage of this form is, that a very small column of mercury is much more visible when it is expanded at right angles to the line of vision. If due precaution be taken to ensure the equality of the tube, this form answers well, especially for ordinary purposes; but where great nicety is required, we would commend the cylindrical tube.

2. The form and proportion of the bulb may vary according to the purpose for which it is to be applied. The larger the bulb in proportion to the stem, so much more delicately susceptible of changes of temperature will be the thermometer. The spherical bulb is to be preferred, for their shape is least likely to be affected by the varying pressure of the air; but when the bulb is very large, this form renders the thermometer less susceptible of minute changes of temperature, and pyriform or cylindrical bulbs are usually adopted.

In forming the bulb the mouth must not be employed to blow it, otherwise moisture will condense in the tube, which is expelled with much difficulty, and, if suffered to remain, will greatly impair the value of the thermometer. Good instrument makers use a small bottle of caoutchouc, or elastic gum, fastened by a thread on the end of the tube, while the other extremity is softened by the flame of a tallow lamp, urged by a blow pipe. By compressing the bottle, after the orifice of the softened end of the tube is closed by the aid of another rod of glass, a bulb is formed of any required size; but a neat workman will rarely consider the first blown bulb sufficiently well formed for his purpose. It is generally dilated till it bursts; the glass, while still soft, is compressed into a rounded mass, and a fresh bulb formed of a regular shape and size proportioned to the calibre of the tube. Should the artist not intend to seal the tube immediately, he usually hermetically seals the other end of the tube to prevent the entrance of damp air and dust.

3. The necessary precautions used in filling thermometers with mercury are plainly pointed out in Nicholson's Chemistry, viz:—

The mercury should be clean, dry, and recently boiled, to expel air as much as possible. Mercury is often cleaned by thermometer makers by agitating it in a phial, for some time, with sand, and then straining it through leather: for nice instruments it should be distilled from iron filings, or reduced from its sulphurets in clean iron vessels at a moderate heat.

The bulb to be filled, is heated in the flame of the lamp, and the open extremity of the tube is immersed in the mercury; as the bulb cools the pressure of the atmosphere forces through the fluid into the tube and ball. The bulb should be but moderately heated at first so as on cooling to become only half filled.

4. To ensure a delicate thermometer the mercury is next tobe boiled in the thermometer. For this purpose a slip of clean paper is to be rolled tightly round the upper part of the tube, so as to form, beyond the orince, a cup or cylinder, capable of containing as much mercury as the bulb: secure this round the tube with a thread, put a drop of mercury into the paper cavity, and again apply the heat to the bulb, holding the tube by the part covered with the paper, the mercury will soon boil, and about one half of the contents of the ball will rush up into the paper cup. On removing the bulb from the candle the mercury will suddenly return. Repeat this operation again and again, until the speedy boiling of the mercury, and the diminished rise and agitation show that the whole has been well heated, and air and moisture expelled from it. Should there be the least moisture in the tube before this part of the operation, it is very likely to burst the bulb; and the same accident is likely to happen if the mercury be too strongly boiled the first or second time.

5. The tube is now to be hermetically sealed, that is, closed by the fusion of the glass at the upper extremity, which, for this purpose, is previously drawn to a capillary orifice. When it is intended to free the tube entirely from air, which is the best method with mercurial thermometers, heat is again to be gently applied to the bulb, which, at the same moment, is to be softened by another flame, and closed in the usual way, as soon as the mercury reaches the extremity of the tube. When the ball has cooled a little, the sealing is rendered more secure by fusing the glass more fully around the top, so as to completely obliterate the orifice. If the vacuum be perfect, the mercury will fall to the extremity of the tube, on inverting the thermometer, unless the calibre be absolutely capillary; in which case capillary attraction will overcome the force of gravity, and the mercury will retain its position in the tube, in every situation of the instrument. Where there is a complete vacuum in the tube, the mercury must be well boiled before the sealing, as above directed. And when we choose a thermometer, the ready falling of the mercury, on inversion of the tube, is the best test we can have that the mercury has been well freed from air and moisture. This vacuum is not, however, so essential to the true action of the thermometer as was once supposed. A thermometer with a small dilation of the tube when sealed, containing some common air, has lately been recommended as preferable to the instrument with a vacuum on the surface of the mercury.

6. We come now to the last and most delicate step of the process, the adaptation of the scale to the instrument.

In the manufacture of thermometers this is conveniently done by plunging the new instrument, along with a standard thermometer, into two liquids at different temperatures: but the graduation of this standard instrument is a work of such nicety and importance, that a committee of seven members of the Royal Society was formed to investigate the subject, and their elaborate report is given in the society's transactions, where all the requisite circumstances are distinctly noticed, and the best manipulations minutely described. Two fixed points are sought, and the freezing and boiling points of water are most convenient for that purpose. To find the first, nothing more is necessary than to place the thermometer to be graduated, after it is filled, in melting snow, or ice, in such quantity around the ball and tube, as to bring it to the desired temperature. When the mercury has become stationary in the tube, a mark is to be made on the tube with a file, just opposite to the top of the mercurial column, and that mark fixes the freezing point of the scale of the instrument. The determination of the boiling point is much more difficult because it is affected by atmospherical pressure, and even by the form of the vessel in which the water is heated. The Committee of the Royal Society recommend that the boiling point ought to be fixed under a barometrical pressure of 29·80 inches.

The Present Cotton Crop.

Any cry of a short crop from the southern planter is considered an attempt at a panic by the cotton brokers of New York and the spinners of Manchester. But the culture of the cotton-plant and the theory of its production, have been reduced to such unerringly successful practice, and to experiments and calculations, by millions of attentive and observant minds, that neither will hardly allow of any improvement. Any intelligent planter can tell you precisely what effect certain kinds of weather will have upon the cotton crop—whether a rain will make the "squares" "sheer," or "stick," whether damp, cloudy weather will benefit or injure the devouring "lice," or whether precisely the same season would increase or decrease the "rust." Sometimes drouth benefits, sometimes injures cotton; so also with rain. Through all these changes an intelligent planter can look to the result as certainly as you can tell the effect of a chemical combination. I have been over every section of the cotton-growing country, and my experience and observation enables me to state that any great atmospherical change near the 32° N. latitude, is certain to be general over the whole cotton region. Judging, then, from our experience, let us make a calculation as to the extent of the present crop. An examination of the following causes will enable us to determine: Human or Artificial Causes; these are,

First—Our planters are just learning that first rule of trade—the effect of supply and demand. Experience has compelled them to believe that a shorter crop brings more money; ergo, by general consent they have not increased their crops.

Second—The changing of cotton into sugar plantations, in the States of Texas, Louisiana, Mississippi, Alabama, Georgia and Florida.

Third—The immense amount of labor (entirely black) diverted from the culture of cotton to the building of railroads and factories.

Fourth—The scarcity of corn, from last year's frost, has raised its price from 100 to 200 per cent. (varying in different localities,) and has compelled planters to increase the corn crop. Indeed, I do not know, even under the increased planting of this year, a single farmer who will have corn to sell.

Fifth—The continued agitation of the slavery question has diverted capital from the cotton culture.

I think you will agree with me that these causes are competent to produce some effect. Now for the natural causes—

First—The seed is very much deteriorated by last year's frost; indeed, if next year proves as unfavorable as 1849–50, we shall be compelled to get our seed from Mexico again.

Second—The length of the season, which is six weeks later than usual; this is easily proved by the picking; I have not picked a boll yet, and shall not commence until about the 5th [last week,] although I have had cotton ginned and packed fully a month earlier. My father, a very successful planter, had a saying that he would not give "one stack two weeks older for two, two weeks younger." Every planter knows how good the adage is in a short season.

Third—The cotton stock, thrown back and stunted by the drought, is too small to bear a good or even an average crop of bolls.

Fourth—The immense heat (average 98° in the shade) and no rain (2·95 inches in ten weeks), have forced the cotton plant to an early maturity, and the bolls are not half as heavy as usual, while the continuous drought is causing the bolls and squares to drop continually.

Indeed, it depends upon continuous moderate showers until October, and a very late frost, whether we make a decent crop; though I do not know whether an early frost will damage the crop or not, as this fall is an anomaly in cotton culture. The last crop of "squares," if this is an ordinary season, (frost 15th of Oct.,) have been made about two or three days since; as we do not calculate upon a "bloom" after Sept. 10, and it requires 3 weeks for a square to form a bloom. Last year we had equal to no frost at all, as I have "rattoon" cotton in my corn fields which came up from the old stocks, and has stood four plowings without being killed. Without pretending to estimate the crop, I must say, that I think it (the crop of 1850–51) will prove the shortest of a long series of years.

STATE RIGHTS.

La Grange, Geo.

Quadrature of the Circle.

Observing in your paper of the 27th ult., an article on the Quadrature of the Circle, I am led to suggest a few remarks on the subject.—Neither by numbers nor geometry will this question, in all probability, ever be solved—but by a simple experiment in mechanics it can be. Thus, take a block of metal, place the same in a perfect engine and reduce it to an exact square, ascertain how much fluid this square will displace. This can be done correctly by an apparatus that shall leave but a small surface of fluid to be operated on; then take another block of the same material, which should be reduced to the exact thickness of the square heretofore described, place the same in the engine, reducing the other four sides, by turning down until it will displace the same quantity of fluid as the square before described. If correctly done, and the metal have no imperfections in it, the two blocks should weigh precisely alike. This being the case, the square before described is circled, consequently the circle is squared. The proportion of the diameter of the square to that of the circle, or the proportion of the circumference of the circle to that of the four sides of the square, is hereby demonstrated. The square of the sphere, also, is to be obtained by a similar experiment. EXPOSITOR.

Providence, R. I.

[We have received quite a number of articles on this subject since we noticed the work of Mr. Fleming on the subject. We did not intend to publish any of them, because they reflect no new light on the subject. The above article being short, we thought we would publish it, because others may be wasting their time with the same lucubrations. It is perhaps needless for us to say, that the above leaves the subject in the same region in which it was before, for there is neither formula left to guide, nor proof correctness stereotyped in it.

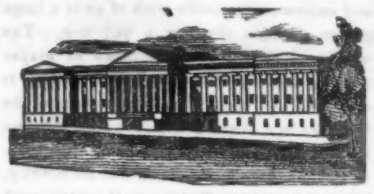
The Floods of 1850.

This summer has been remarkable for its storms and freshets. We do not remember of a summer in which so many storms occurred, and storms of such a destructive nature. From East, West, North and South, the news of disaster by the overflowing of rivers and creeks, is most appalling. During a part of last week, the State of Pennsylvania in the Lehigh region, suffered greatly. Schuylkill river carried dreadful destruction on its swollen waters. In New Jersey there has also been great loss of property, and New York has had her share of disasters. The dam at the Albany Nail Factory, near Troy, was carried away, and much damage done; in fact, from every State we have news of more or less destruction of property by these remarkable rain storms. The year 1850 will be long remembered for its storms and floods. Old men say they do not remember such a stormy season in all their lives.

Rats for the Table.

There are many parts of the world where rats are eaten, and such rats as would astonish those accustomed to our species, which, take even the largest, are Lilliputian as compared with a native of the East Indies, first satisfactorily described by Gen. Hardwicke in the seventh volume of the "Linnæan Transactions." The specimen he described was a female and weighed two pounds eleven ounces and a-half; its total length being two feet two inches and a quarter. He assures us that the male grows larger, and weighs three pounds and upwards; so that the natives have before them on table an animal as large as a wild rabbit, doubtless, as they have no prejudices or scruples, just as palatable.

The theory and practice of Dr. Cheyne was, "the slightest and least of meats and drinks a person can be tolerably easy under, is the shortest and most infallible means to preserve life, health, and serenity."



☞ Reported expressly for the Scientific American, from the Patent Office Records.

LIST OF PATENT CLAIMS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending September 3, 1850.

To Lambert Alexandre, of France, for improvements in sub-marine vessels.

I claim the method of effecting a circulation of the air, and of maintaining an atmosphere in the cabin of the requisite bulk to prevent the encroachment of water during the descent of the vessel, and of preventing the waste of air by its expansion and escape from the cabin during the ascent of the vessel, by pumping it either out of or into the cabin or air reservoir, as may be required, even when the density of the atmosphere in the compartment whence the air is drawn is less than that of the atmosphere in the compartment into which it is forced, as herein set forth.

I also claim the device, consisting substantially of the drop platforms, chains, and draw pin, for the purpose of carrying ballast on the exterior of a submarine vessel and of discharging it at will, as herein set forth.

To C. F. Brown, of Warren, R. I., for improved method of attaching lines to harpoons.

I claim the manner of attaching and securing the line to the harpoon by means of the ring sliding on the shank, and the rounded end of the socket or butt, in the manner substantially as herein described.

[This is a most excellent invention.]

To L. S. Chichester, of Troy, N. Y., for improvement in machines for dressing staves.

I claim in the above described machine for shaving staves from rived bolts, the employment of two concave knives for shaving the outer or convex surface of the staves, substantially as herein described, in combination with a single knife for shaving the inner or concave surface of the staves, when the said single knife is placed in a line midway between the other twe, that is, oppposite the space between the other two, substantially in the manner and for the purpose specified.

To S. A. Clemens, of Granby, Conn., for improvement in pressing cotton, and other substances into bales.

I claim the method of packing and compressing substance into bales or packages in a series of successive layers or strata by means of rolling pressure or its equivalent, substantially as herein specified.

I also claim combining with the laying and compressing rollers or cylinders or their equivalents, a bed which shall be gradually separated from the rollers or cylinders as the layers or strata accumulate, and which shall also traverse from end to end under the rollers or cylinders or vice versa, substantially as specified.

I also claim, in combination with the cylinders for packing and pressing substances in successive layers, a lapping apparatus for forming such substance or substances into a lap or laps, to be delivered to the rollers or cylinders or their equivalents, to be laid and pressed into the bed substantially as described.

I also claim, in combination with the laying and compressing cylinders or their equivalents, the series of rollers or their equivalents, for retaining the layers or strata as they are successively compressed, substantially as specified.

I also claim, the bed made without sides or ends substantially as and for the purpose specified, in combination with the carriage provided with adjusting plates at the ends, for the purpose and in the manner substantially as described.

And finally, I claim in combination with the adjusting plates at the ends of the carriage, the stationary plates at the ends of the frame under which the adjusting plates pass, to remove the substance that may have accumulated on them, substantially as described.

To Samuel Colt, of Hartford, Conn., for improvements in repeating fire-arms.

I claim making the central bore of the many chambered rotating breech which fits and turns on a central pin or arbor, to extend from the rear part thereof to within some distance from the front end, and thus leave the front end closed, substantially as described, to prevent the access of smoke, when this is combined with the connecting of the barrel with the shield piece and lock plate, substantially as described.

To David Current, of Crittenden, Ky., for improvement in hand-spinners.

I claim the combination of the clamp lever with the cord and drum, for the purpose substantially as described.

To Wm. Field, of Providence, R. I., for machine for bevelling the surfaces of washers, &c.

I claim the method substantially as herein described of drawing out and giving a bevel form to metal clinch rings, washers, &c. by the action thereon of the surfaces of a series of travelling rollers turning on bearings, arranged about a common centre of rotation and combined with a spindle or mandrel, adapted to the reception of the clinch rings or washers, to be formed and provided with the means, substantially as herein described, for turning it to present in succession every part of the periphery to the action of the rollers, substantially as described.

I also claim, in combination with the spindle or mandrel for presenting the clinch rings or washers to the action of the travelling rollers, a gripe, substantially as described, for griping and holding the said rings or washers on to the spindle or mandrel, whilst passing under the action of the travelling rollers as described.

To C. W. Finzel, of Bristol, England, for improvement in draining sugars.

I claim the mode of applying steam or liquids, to machines used for separating syrups or fluids from sugar by means of centrifugal force, for the purpose of clearing and keeping clear the meshes or apertures in the periphery of the revolving cylindars of such machines, in manner herein described.

To E. B. Forbush, of Buffalo, N. Y., for improvement in clamps for holding paper in writing and drawing.

I claim the clamping slides made to slide freely on the parallel rods operated by the lever and the springs, substantially in the manner and for the purpose as herein set forth.

To O. W. Hogle, of Somerset, N. Y., for improvement in fastenings of Hay Rakes.

I claim, first, the manner of holding the teeth firmly in their required positions against the sliding bar, during the operation of the machine, by means of the aforesaid combination of the ratchet wheel, pawl sliding bar, and stern helical spring fixed-bar and slide attached thereto, with the parallel guiding arms and revolving finger shaft, arranged and operating in the manner and for the purpose above set forth.

Second, I claim the combination of the slide helical spring strap and roller, with the parallel arms and fixed bar, for disengaging the sliding stop bar from the rake teeth, without moving the hand from its usual position on the hand roller, to allow the teeth to revolve to deposit the hay in windrows, as herein fully set forth.

To S. S. Jewett & F. H. Root, of Buffalo, N. Y., for improvement in Stoves.

We claim the jambs of stove or grate fronts or ends, constructed with a recess closed by doors, within which the doors of the fire place are folded up and concealed from view; the fire place doors being constructed and arranged to turn back into the recess, substantially as herein described.

To David S. Neal, of Lynn, Mass., for improvement in Car Couplings.

I claim the bearing roller (or rollers) placed within the body of the coupling, and the bearing roller located in one end of the connecting link, for the purpose of enabling the connecting bolt to be easily detached from the link when the cars are in motion; when this arrangement of the said rollers and connecting bolt is combined with the loop, the catch head and cord, for uncoupling, in such a manner that the loop will be disengaged when force is applied to withdraw the bolt, but will prevent the connecting bolt from being accidently thrown out of place when the cars are in motion.

To J. F. Ostrander, of New York, N. Y., for improvement in Planing Machines.

First, I claim the use and employment of the cutter made in form or any analgous manner, whereby the peculiar cutting, bevelled scolloped edge is obtained, for planing or dressing plank or other material, substantially as herein set forth.

Second, I also claim the use and employment of the cutter in combination with the compressing spring feed rollers and straight edge, or any one or more of them, in form and manner and for the purposes substantially as herein set forth.

To Barthelemy Thimonnier, Sen., of Amplepius, France, (Assignor to Philip May of London, England) for improvements in Sewing Machines.

I claim the hook, the surface, the tube or holder and thread carrier, working substantially as above described.

To John H. Towne, of Philadelphia, Pa., (Assignor to Solyman V. Merrick, of Philadelphia, Pa.) for improvements in the direct action steam-hammer.

I claim attaching the hammer to the sliding steam cylinder, substantially as herein described, the steam being admitted and discharged to and from the sliding steam cylinder, substantially as herein described.

To Wm. P. Tatham, of Philadelphia, Pa., for improvements in manufacture of lead pipe.

I claim the method, substantially as herein described, of setting or cooling the inside of the mass of metal within and throughout the length of the cylinder and before or preparatory to pressing out the pipe, by passing a cooling fluid into or through a long core or core-holder, extending through the length of the cylinder, as herein described, the said method having the effect at the same time to keep the said core or core-holder cool and stiff, as described.

To Seymour Tomlinson, of Washington Hollow, N. Y., for improvement in apparatus for Breaking Horses.

I claim the method, substantially as herein described, of breaking horses by means of the shafts which are connected together by a bow passing around in front of the horses breast, substantially as herein described, in combination with the two straps, one passing over the crest and the other under the breast, by which the horse is harnessed to the said shafts, substantialy as described.

To Benjamin Welch, of Lakeville, Conn., for improvement in Surgeons's Splints.

I claim my improved surgeons splints, composed of thin strata of wood combined with some elastic adhesive substance interposed betweeen them, substantially as herein set forth.

Magnetic Principles of the Solar System, or, Deductions from Experiments with the Solar Magnetic Engine and previously known Astronomical Truths.

BY WM. W. HUBBELL, ESQ.

On surrounding a solar magnet of six inches diameter, by eighteen equidistant planetary magnets, I found that by charging the solar magnet with magnetism, and leaving the planetary magnets or bodies uncharged by the batteries, the solar magnet would polarize them at the clear distance of one inch, (a greater distance I did not try.) This fact convinced me that magnetism diverged from the entire circumference of a solar magnet, similar to the radiation of light from the sun, or any body of light. It is also a known fact that the rays of the sun will, in a few minutes, cause a magnet to be more powerful than it will be when kept for a considerable length of time in the dark, showing that the sun-light is instrumental in the production of magnetism. These facts, together with almost universally known astronomical truths that will be recognized in what I am about to state, lead me to the following superstructure of material law, accounting for the variations and intensity of the magnetic needle; of all which I have no doubt.

In analogy to the solar magnet polarizing its planetary bodies when not polarized by a battery, I suppose the sun or solar centre to polarize its planets by means of its divergent rays of light; that these rays of light, like the fluid of the solar magnet, diverge strongest at right angles from its axis; that the polar axis of the planets, or focus line of their poles, is always (about) parallel with the axis of the sun; that the attraction and repulsion existing between the sun and his planets, causing them to approach and recede, and revolve around him, are brought about by the alternate approximation of their poles, owing to the respective oscillating movements of the planets; by means of which, with the earth, (as we say,) the sun passes back and forth between the tropics;—this approximation in the solar engine is produced by changing the planetary poles at the points of aphelion and perihelion by means of the galvanic battery, being another mode of producing alternate approximation of the planetary poles.

My theory, or superstructure of material law, is this: That the sun, by means of his rays of light, polarizes the planets; and the earth being one of those planets, has, as it rotates on its axis, generated by the light of the sun acting on it, a belt or current of electricity strongest between the tropics, over the torrid zone, which polarizes the extreme parts of the earth, to wit, the north and south poles. Now, as the earth oscillates, and the axis or focus line of the poles must be parallel with the axis of the sun, it is evident that the focus of the poles and the axis of the earth can only be coincident when the sun is, as we say, on the equatorial line of the earth, and that at all other times, the focus of the poles must be moving in an approaching or receding spiral circuit about the axis of the earth; this precise conformity of parallelism of polar focus of the earth with the axis of the sun, would also be governed or influenced by the residuary or permanent magnetism of the earth, from which the attaction and repulsion must ensue in the alternate approximations of the poles to the sun; this would influence the degree of variation of the focus of the poles, but nevertheless, true it is, and in accordance with other astronomical truths, that the sun, by means of his light, polarized his planets, and that the focus of the poles can only be coincident with their respective axes when he is opposite, or is passing the equatorial line; and that at all other times the focus of the poles is in a spiral circuit, either approaching, or receding from, the axis of rotation of the planets respectively; and as respects the earth, the magnetic needle at sea and elsewhere varies, always pointing to the focus of the poles, governed by that focus, and varying about the axis of the earth's rotation as it varies. Again, as the sun by his light polarizes the planets, and the earth varies in distance from the sun as it traverses its annular orbit, it follows necessarily that the intensity of the poles must change with the change of distance, and that the polarization is strongest when the earth is at its aphelion, and least when at its perihelion. This affects the intensity of the magnetic needle, and also another fact affecting it, is the varying distance of the polar focus, as it moves in its spiral circuit about the axis of the earth.

There is no law or demonstration that I can find to controvert this superstructure of natural law; the known variations, of course, and intensity of the magnetic needle, or compass itself, go to confirm it.

By a series of observations and calculations based upon this superstructure of natural law, made at our National Observatory, it is highly probable that the focus of the poles of the earth can be located at any given time on any future day, and thus greatly increase the security of navigating the ocean by the aid of the compass.

Philadelphia, Aug. 10th, 1850.

No less than $26,000,000 are paid in duty every year, in Britain and Ireland, for home-made whiskey; the wholesale cost is $40,000,000. For beer, rum, wine and whiskey, more money is spent every year than the whole income of the government—that which keeps up the immense fleet and army of the land.

At the present moment Electro Magnetism, is engaging a great amount of attention.

New Inventions.

Improvements in Carding.

Messrs. J. Lambert & J. Zimmerman, of Waterloo, N. Y., have made an improvement in the working of Carding machines, for which they have taken measures to secure a patent, and which is said to card double the quantity at least, in the same time, than has usually been done by the old mode of operation. The "Workers," instead of carrying round the wool from the main cylinder, at once, by revolving in a contrary direction, revolve with it, and carry the wool but a short distance to the strippers, and thus, by the way, they are geared; the "workers" are rendered workers indeed, and not merely in name.

Tapestry, Velvet, and other Carpets.

Mr. James Templeton, of Glasgow, Scotland, has taken out a patent in England for an improved method of manufacturing carpets, the designs of which are produced from the *weft* threads, which are previously printed to produce the design or pattern. He makes velvet carpets by employing *chenile* weft, previously printed, which weaves up into the patterns designed; he also makes carpets by the printed weft, which work up into patterns on both sides of the carpet, like those of the ingrain carpet. The principle of this important improvement in carpet weaving to do away with the *jacquard*, lies in the mode of printing and preparing the weft, previous to weaving.

Scientific and Mechanical Information.

More than ever, our attention for the future will be devoted in procuring the latest and most important information from all parts of the world, respecting new and useful improvements and discoveries. Our correspondent in London, of whom we spoke a few weeks since, will impart interest to our columns, by his reviews on the Grand Industrial Exhibition, to be held in London next year. All inventors prefer to have engravings and descriptions of their inventions brought first before the public, through the Scientific American. The reason is plain; we have the largest circulation of any other paper, and the public look to our columns for what is *new* and *useful*.

Improvement on Steam Engines.

Messrs. B. Donkin and W. Farey, styling themselves Civil Engineers, have recently taken out a patent in England for improvements in disc engines, connected with which, their patent embraces an improvement in working slide valves to equalize the pressure of the steam on both sides of the slide; to do this, the face on which the valves slide, is serated or grooved, and these grooves will contain steam under the valve.

To Inventors and Patentees.

Our list of patent claims is worth more to you than the price of the volume. Our index is so arranged that all the patents granted, are classified, and affords a most useful and standard work of reference. Inventors who consult their own interests, cannot be without the Scientific American.

Crank and Pully.

A number of experiments with two boats, the one named "Crank," and the other named "Pully," have lately been made on the East River, by Mr. Peter Yates, to test the comparative value of Mr. Yates' invention; the Pully, we have been informed, has universally been the victor. In the course of one or two weeks we will illustrate Mr. Yates' invention of the "Pully," as applied to a steam engine, in place of the crank.

Notice.

In referring to the address of the proprietors of the Rotary Brick Machine in our last week's number, it should have read, "Address Wagner & Imlay, 203 Market, or 74 Walnut st., care of A Miller, Esq., Philadelphia.

India Rubber Flute.

An eight keyed flute made of india rubber has been made in this city, by Mr. Badger. It has a fine polish and looks like tortoise shell. It has a beautiful tone and cannot be affected by the weather.

Improved Machinery for Grinding Spiral Knives.

Mr. Jas. L. Plimpton, of Westfield, Mass., has invented some valuable improvements on machinery for grinding Spiral Knives, for which he wisely has taken measures to secure a patent. The invention embraces two new and excellent features; one is to grind the edge of every one of the same bevel, and to change the bevel on the frame which holds the knives without changing the knife or knives, as in the old way; the other is to accommodate the feed of the knives on the frame to the speed of the stone, to make the grinding time uniform—this is done by a friction roller on a swinging frame, running in contact with the stone, so that as the stone decreases in diameter the feed of the knive frame becomes slower in proportion.

BROWN'S ECCENTRIC TOBACCO PRESS.

Figure 1.

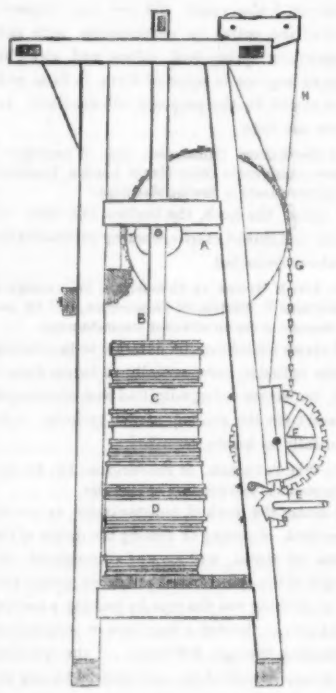
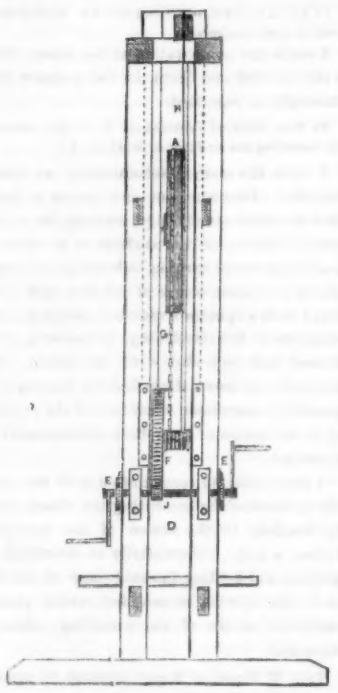


Figure 2.



This engraving represents a side and an end view of a press constructed upon the principle embraced in the patent of Mr. A. D. Brown, of Clinton, in Georgia. It is intended for pressing tobacco on plantations, but it is equally applicable to the pressing of hay, as a cider press, &c. As the principle patented is described on page 96, this vol. Sci. Am., we need not describe it again. In this press the crank, axle and wheel, and the eccentric pully are combined, and according to modifications of gearing, the power may be increased to any amount; the principle of great speed where little power is required, always being maintained, and *vice versa*. A is the eccentric lever pully; B is the stock of the pressure block; C and D represent the barrel and packing cover; E E are the ratchets; F, the cog wheel on the drum shaft, which is driven by a pinion, J, (fig. 2); G is the chain passing round the drum, F, over the eccentric pully, and is secured on a strong block on the frame; H is the rope which raises the follower and block up, after the tobacco, &c., is pressed in the barrel or box. It is not necessary, after our reference above, to describe the operation, any further than to say, that if the pin is 1-16th of the diameter of the eccentric pully from its periphery, and a 48 inch cog wheel, 6 inch pinion, 8 inch drum for the chain, and 15 inch cranks are used, the power applied will be multiplied nearly 300 times; any amount of power can be applied by this kind of gearing.

It is, perhaps, a work of supererogation in us to say any thing more in favor of this simple press—to show the beauty and elasticity of application to so many useful purposes, and to set forth its very extraordinary merits. In Georgia, where Mr. Brown has been known for twenty years as a good practical mechanic, his press has at once arisen to eminence, and come into extensive use, and, at the present moment, he has orders from almost every State in the Union for presses, for cotton, hay, tobacco, or some other purpose. All the parts being so simple, so easily made, and so easily kept in repair, no wonder it at once met with a favorable reception when it was first published in our columns.

Variations of the Compass.

The loss to Great Britain by shipwrecks, appears from carefully prepared statistics, to amount annually to between 500 and 600 ships, or about three vessels in every two days. The cause has been attributed, in a great measure, to misdirections of the compass produced by attractive power of the iron used in the construction of the vessels, as well as the funnels, tanks, and guns employed in men-of-war. The result varies in different cases, and a remedy can only be obtained by direct experiment on board each ship. A "compass observatory" has accordingly been established in England, where every ship of the Royal navy has its compass adjusted before proceeding upon a cruise. The practice has, as yet, not been extended to the mercantile marine.

The Bakatlas of South Africa.

The Bakatlas work a great deal of iron, manufacturing various articles, with which they supply the neighboring tribes. They obtain their iron from ore, which they procure by excavating in the surrounding mountains. This ore is smelted in crucibles, a great deal of the metal being wasted, and only the best and purest being preserved. They use a sort of double bellows, consisting of two bags of skin, by which the air is forced through the long tapering tubes of the two horns of the oryx. The person using the bellows squats between the two bags, which he raises and depresses alternately, working one with each hand. Their hammer and anvil consist of two stones. They nevertheless contrive to turn very neat workmanship out of their hands, such as spears, battle-axes, assagais, knives, sewing-needles, &c. The men of this tribe also manufacture large wooden bowls, which they cut out of the solid piece, the tool they use for this purpose being a small implement shaped like an adze.

The Largest Grape-vine in the United States.

Under this head the Natchez Free Trader, of the 10th inst, has the following paragraph:

Mr. William Casey, corner of Union and State streets, in the city of Natchez, can boast of a grape vine which is, undoubtedly, the monarch vine of the United States. It rises from the ground in a single trunk of some three inches in diameter, nearly straight, and well proportioned, to the height of about nine feet, when it spreads into branches, and covers and embowers the trellis work of quite a large garden, besides climbing a tall tree. The weight of the immense clusters of grapes hanging upon it, now about half grown, is estimated at a ton. To stretch out any of the branches in a direct line, they would measure from three to four hundred feet. The description of the grape is not natural to the country, but was brought to Natchez in the old Spanish times. It is called the "Jack Grape," from "Spanish Jack," the nickname of the Spaniard who planted it. Some years ago, Madame Bingaman, now dead, offered Mr. Casey five hundred dollars if he would remove the vine safely to her garden, in the environs of the city; but no sum of money whatever, would induce the owner to part with it. It produces a wine which has the taste of Hock.

The Electric Telegraph in Europe.

It is well known that various projects have been proposed for a Transatlantic Telegraph; this will be no easy matter, owing to the length of wires required. In the present state of Electric Telegraph science, it is impossible, owing to the distance of such a length of wire between the batteries. Between Calais in France, and Dever in England, the distance being no more than 25 miles, the project of an ocean telegraph is not only feasible, but the construction of one is in actual operation to unite France and England. The Telegraph is to be on Bain's principle, now so well known in America. The telegraph, like steam navigation, will be the means of spreading rapidly the arts and sciences of civilized nations among all lands. The Dublin University Magazine says:

"When the powers of this improved telegraph shall be brought into full operation, and when the mode of intercommunication shall be available by the public in all parts of Europe, great changes in the social and commercial relations of the centres of commerce and population must be witnessed. Hitherto, the use of the telegraph has been limited to the Government. The public has been altogether excluded from it. Such a system, however, cannot be of long duration, and the precursors of a speedy change are already apparent. A project of law has been presented to the Legislative Assembly, by the French Government, to open the telegraph to commerce and the public. Lines of electric telegraph have been constructed, and are already in operation, along the principal lines of railway in France. A commission has been appointed, by the Belgian Government, to report upon the means which ought to be adopted to construct lines of electric telegraph throughout that kingdom. Lines of considerable extent are in operation in the Prussian States, and still more extended systems are in preparation. Measures are in progress for the establishment of lines of electric telegraphs in the territories of Austria, Saxony, Bavaria, Wirtemburg, Baden, and all the lesser states of Germany. The Emperor of Russia has issued orders for the construction of lines of telegraphic wires to connect St. Petersburg with Moscow, and with the Prussian, Saxon, and Austrian lines of telegraph."

Sticking, or Court Plaster.

Bruise a sufficient quantity of isinglass, and let it soak in a little warm water for four-and-twenty hours; expose it to heat over the fire till a greater part of the water is dissipated, and supply its place by proof spirits of wine, which will combine with the isinglass. Strain the whole through a piece of open linen, taking care that the consistence of the mixture shall be such that, when cool, it may form a trembling jelly.

Extend the piece of black silk, of which you propose making your plaster, on a wooden frame, and fix it in that position by means of tacks or pack-thread. Then apply the isinglass (after it has been rendered liquid by a gentle heat) to the silk with a brush of fine hair (badger is the best). As soon as this first coating is dried, which will not be long, apply a second; and afterwards, if you wish the article to be very superior, a third. When the whole is dry, cover it with two or three coatings of the balsam of Peru.

Scientific American

NEW YORK, SEPTEMBER 14, 1850.

To our Subscribers.—The End of the Volume.

This number concludes the Fifth Volume of the Scientific American. From a small beginning, it has grown to have the largest circulation of any other paper devoted to the same objects, in this or any other country. For our extensive circulation we are more indebted to the interest which our subscribers, universally, have taken in its prosperity, by the zeal they have exhibited to promote its circulation and widen the circle of its influence, than any other paper ever published in our land. To you we can say with gratitude, "Your breath hath filled our sails." We have the same trust and confidence in the good will and kindness of our subscribers that we ever had, and which has never disappointed, but more than realized our expectations.

In casting a glance over our labors for the past year, we cannot wrap ourselves up in the habiliments of self-pride and say, "we have done all things to perfection." Mortals are not faultless; all have their faults—the best have their failings. We have always endeavored to conduct the Scientific American impartially, honestly and independently. Without fear, or regard for favor, we endeavor to speak and do what we think is just and right, and leave the consequences to the Great Ruler.

As a paper devoted to science and the mechanic arts, it has not its equal in this country in any respect. We do not say this as a mere matter of boasting,—this is universally admitted on all hands. We present to our readers more new inventions, illustrated, more real every-day practical information, and a greater variety of well packed condensed matter every week, than any other paper. A yard of cloth is not valued as a *yard*, but according to its quality, neither should any person value a scientific and mechanical paper by its size, but by what it contains. Our advantages in obtaining useful information, and a knowledge of what is new in the arts, are far superior to those of any other paper in the United States. Our correspondence is very extensive, and so is our acquaintance with practical and able inventors and mechanics. This acquaintanceship has been of many years standing, and, with many, our friendship is of the most intimate nature. This enables us to obtain more new and useful information relating to inventions and discoveries, than any other paper in our country. To inventors, our weekly list of patent claims are worth the whole price of their subscriptions, and no other paper in our country presents anything at all like the information we have presented, and can present, relating to patents and new inventions. We have added improvements to every new volume, and we will make Volume 6 superior to all its predecessors. We are determined to labor more assiduously and fervently than ever, to maintain the character of the Scientific American, as being "The Best Mechanical Paper in the World." We hope our subscribers will try and get others to club along with them for Volume 6. We intend to lay out considerable more expense on it than on our former volumes. It will be the best Encyclopedia—as a weekly paper—of mechanical and scientific knowledge, ever published. We hope subscribers will send in their subscriptions early. We can assure every man, that he will get the full value of his money, and will never repent having become a subscriber to the Scientific American.

Engravings.

It has always been allowed that the engravings in the Scientific American, far excel those of any other mechanical paper; we will still keep at the top of the sheet. Our next volume will present the greatest number of unrivalled illustrations ever presented in a weekly paper. Our readers may depend upon it, that their subscriptions will be seed sown upon good ground, which will spring up and bear them good fruit.

The Great State Fair.

We took the opportunity, last Friday, of visiting the State Agricultural Fair, held at Albany. We were assured that the day was the most pleasant of all the preceding ones of the week, as a rain storm had laid the dust of that dusty, dusty road, between Albany and Troy. The Fair tents covered an extensive area, but not more so than those for refreshments, gambling, and all manner of Riff-Raffs. In one place there were Irish jigs going on, as a faithful specimen of the *finest peasantry*, full of humor as at Donnybrook. Circuses, raree shows closed up the back ground, with "warm meals at all hours," by a representative of the press, who, no doubt, had the wisdom to discern that food for the stomach was as necessary as food for the mind and a feast for the eyes. Along with much evil there was much good.

With the live stock it is not our province to deal, although we have some skill there, Hal, and have been held a connoisseur in beef and mutton. We can, however, say a good word for what we saw of that, more than we can say for the drinking and dancing. "Mechanics' Hall" was the best situated tent on the ground, and the most interesting. It is morally impossible to give an abstract notice of all we saw. We saw many good, new, and useful things, and many, no doubt escaped our notice; and we also saw much that was literally worthless. Mr. Emery, of Albany, exhibited the best and greatest number of agricultural implements that we ever saw collected in one place. He was awarded quite a number of prizes; and so were some of our old friends, whose machines had appeared in the Scientific American. Among these we may mention Lerow & Blodgett's Sewing Machine, on page 1, Vol. 5., Sci. Am.; Mr Wright's machine from Rochester, for sawing ship and other curved timber, which is illustrated in No. 3 (same volume,)—this good machine, as it should, commanded a great deal of attention; Bertholf's excellent Straw Cutter, on page 52, was there; and here let us mention another straw cutter—an entirely new one—which we saw, viz., that of Cleveland & Baker Adams, of Jefferson Co., N.Y.; this straw cutter cuts the whole length of the straw up into pieces at one revolution of the roller. It is very simple, no feeding rollers are used, the feeding blades, of which there are a great number, revolve on a long roller, and cut the straw against stationary knives. Mr. Adams, from Hadley, Mass., was there with his improved Felloe Machine, and his superior Dog for planing machines, all of which have been illustrated in our columns. The Apple Paring Machine of Mr. Weed, illustrated on page 84, was also much admired; Mr. Brown's Candle Mould, illustrated on page 164, was the subject of special notice; Dick's Anti-friction Press and Punching Machine, illustrated on page 220, was exhibited by Mr. Holmes, of New York, and had no equal there; Grosbon's Patent Corn Planter, illustrated on page 327, was highly admired; Mr. A. H. Brown's hose coupling, on page 332, was in use on the ground; Mr. Brown is a very ingenious and intelligent gentleman. The improved Plow of Mr. Baker, of Troy, on page 348, had not its superior there, although a plow, belonging to Messrs. Starbuck, surpassed all others, in our eyes, for superior workmanship. Mr. Ide's improved Grain Drill, page 372, and the improved Grain Separator of Messrs. Herring, on page 408, were held to be unbeatable in their line. Churns and horse-powers were abundant,—some of the latter were good, and some were worthy of a more benighted age. As usual in all Fairs, there were plenty of Washing Machines, the newest and best of which was that of Mr. Joseph Hall, now of Lansingburg, N. Y., it is named the "Concavo and Convexo Roller Washing Machine;" it is simple, only consisting of two rollers and an endless apron; the apron saves the buttons, &c., and allows delicate articles to be safely washed. The rollers are graduated with coiled springs to accommodate themselves to the washing of all kinds of clothes.

Mr. Winnie, of Albany, had a steam engine in operation, with his "Patent Cut Off," which appeared on page 268, Vol. 4, Sci. Am.; a section model, showing the whole interior operation, was at work; this improvement should be more extensively introduced—it has but to be seen to be admired. Our friends Hoard & Bradford, of Watertown, N. Y., had one of their unique and compact engines and boilers in full swing; it attracted no small degree of attention. R. V. DeWitt, C. E., of Albany, had a model of his Helex Boiler there; it may be termed the "Turbine Boiler;" it is undoubtedly an economizer of fuel. John Rodgers, of Albany, a first rate engineer and machinist, exhibited the best tobacco cutting machine we ever saw; it is a rotary cutter, with two curved arms, on which the knives are placed; it would make a first rate power straw cutter. Mr. John Gibson, of Albany, had his "Woodworth's Planing Machine" in full operation; the character of this machine being so well known, we need say no more about it than to state, that the principle embraced in the same patent, was employed in a separate machine, turning out excellent mouldings.

Albany and Troy being celebrated for the manufacture of stoves, the number exhibited struck strangers with astonishment; it is no easy matter to say anything new about stoves—we believe the majority of them are specimens of unsound devising; we saw one, however, in full cooking sway, viz., that of Mr. Shaw, of Albany, which gave us a very favorable opinion of its merits: it applies the heat thrown down below the grate to the whole purposes of cooking and baking also. Mr. R. Hilson, of Albany, patentee of a Hot Air Furnace, exhibited a model grate for coal-burning locomotives, and equally applicable to stoves; the centre of it is a hollow elevated half sphere, to prevent the caking of the coals; this grate is an excellent one for stoves.

Messrs. Hotchkiss & Sage, of Windsor, Broome Co., N. Y., exhibited their Noddle Iron for saw mills, and an improved step for plumbing the spindles of stones and wheels; it is arranged to move the spindle plumb in a bush according to the load on it; it is a new and good invention. Mr. Rowe, of Albany, exhibited a most excellent and ingenious machine for splitting and rolling leather; we have never seen a machine to be compared to this in any manner, for the accomplishment of the same objects.

There were some excellent carriages on the ground. A splendid Brougham, from the coach factory of Gould & Co., of Albany, took our eye; Eaton & Gilbert, of Troy, exhibited a fine Omnibus. Mr. Wemple, of Albany, exhibited a carriage of great beauty. There were two carriage improvements from Old Scoharie Co., which did credit to the inventors. One was the Patent Coupling of D.W. Seeley, of Carlisle, for vehicles, which has not and never had its equal in our own nor any other country. Our cotemporary, Mr. S. Hosack Mix, editor of the "Schoharie Patriot," exhibited a Wagon for Plank Roads, with his improved "oscillatory rolling axle," which is the grand dissideratum for changing the axle to accommodate itself to the line of draught in every case where an obstacle is presented or a hill to be surmounted, and at the same time it answers as a *break* in descending steep grades. This is a good invention.

In Manufacturers' Hall the show was good, but the place was mud to the knees; it was impossible to do justice to ourselves or others without a pair of "California boots." Among the many things presented, we were especially struck with some splendid specimens of coloring on cotton, silk and wool, by P. B. Leddy, of Albany. Knowing the great amount of practical chemical knowledge required to be good at this art—an art to which we are all indebted for personal decoration, and respecting which so many are ignorant—we cannot but say that the specimens exhibited did great credit to Mr. Leddy, and were highly honorable to the establishment from which they came, viz., Mr. Giffen's. Mr. Roy, of West Troy, exhibited some shawls made at his factory, which, in every respect, rivalled those made in Scotland. We also saw some leather which was tanned by Hibbard's new patent process in fifteen minutes; some may say, "this process is too quick to be good;" well we say "it is not, if the leather is a test?" The samples were well tanned; the calf leather was equal to the French. The discovery is a chemical one. Being determined to speak of nothing but what we saw with our own eyes, we must say, that for want of Jack the Giant Killer's boots, and owing to the great crowd, we had too soon to bid adieu to Manufacturers' Hall, taking a last glance at the unrivalled display of Jewelry, by our old friend James Meeks. Ah! here let us add that we noticed some of the linen thread made at Lansingburgh, by Mr. Fisher; this being the first linen thread made in America, it did some credit to Mr. Fisher, but very great improvements have yet to be made before it can rival that made in the north of Ireland and Scotland.

In Floral Hall the exhibition of Fruit and Flowers, was refreshing to the eye, and in the centre were the musical instruments, which were delightful to the ear. A piano with the Dolce Campana Attachment, which appeared in No. 9, Sci. Am., from the manufactory of Boardman & Gray, was a splendid instrument, and so was a six octave, by Ballantine & Barhyt; this instrument exhibited great skill and execution in workmanship.

Owing to the deplorable state of the ground, and the great crowd pushing and driving, many good things, which we would like to have seen, were no doubt overlooked. Two objects of our visit to the Fair were, to see what was new in machinery, and to find out what was intended for the "World's Fair." Respecting the latter we were disappointed, and respecting the whole influence of the Fair, there was much that pleased us, and we saw much to condemn. We will briefly give our views on these points next week.

London Industrial Exhibition

At the Meeting for the Advancement of Science in New Haven, Mr. W. R. Johnson spoke on the scientific interest of the proposed Industrial Exhibition at London, in 1851. He said "it was no doubt known to them all that the British government have formed a committee for the purpose of carrying out the object of encouraging industry in all countries, at the head of which is the Royal Consort, Prince Albert. The British Minister brought the subject, before the government at Washington, and communications with the Governors of all the States were had relative to it. Local committees are formed in the different States to promote the contributions of this country to the Industrial Exhibition, and the attention of this association is earnestly called to it. One of the subdivisions is for raw material and produce. The vegetable and animal kingdom is worthy of being exhibited. Machinery is another class; and it seemed to him of the highest importance that the attention of this country should be called to the fact that 80,000 feet of space had been allotted to America for the exhibition. It is important that nothing should be sent abroad but what would do credit to the United States, and confer a benefit on the individuals forwarding their produce or manufacture."

The arrangements for the reception of foreign contributions, we believe, are very liberal. Every facility is afforded for their convenience and safe keeping. More space in the bazar has been allotted to the United States than to any other nation excepting France; but though we have 80,000 square feet allotted to us, we shall probably have to ask for more room. The American agent, Mr. Thompson, writes that the State of New York alone would, if allowed, fill the entire space assigned to the country. The prizes to successful competitors will amount to at least $100,000, and will be awarded without distinction of country, by as perfectly impartial a jury as can be obtained.

To Our Cotemporaries.

We sincerely thank our 400 cotemporaries who have published the Prospectus of Vol. 6, Sci. Am. We have always received the most courteous and best wishes of our brethren of the Press; to you we are greatly indebted for our extensive circulation. As you have helped to lengthen our shadow, may yours never grow less. If we can do anything in this city for a cotemporary editor, or publisher, we shall always feel happy to do it.

TO CORRESPONDENTS.

"S. S. G., of Phila."—You will see that we used your favor. Be pleased to accept our thanks.

"J. W. K., of N. H."—Your favor containing $4 came safe. We cannot furnish you with number 28, vol. 4—nor send the paper from the Boston office, all the papers are mailed from this office.

"I. H., of Md."—We know of nothing having been arranged like your improvement on sawing, and have no hesitation in stating that it is patentable in one of the arrangements, in the moving of the log, but you will see the other arrangement illustrated in page 316, vol. 3, Scientific American.

"H. S., & R. L., of Md."—We will publish about the patent leather next week.

"M. K., of Mass."—If you are satisfied of the practicability and utility of your plan, we should advise you to patent it. It had better be thoroughly tested.

"A. M. T., of Va."—The earliest account of electricity, artificially excited, of which we have any record, is carried back as far as 600 years before the birth of Christ, when Thales, the Milesian, observed that amber, after having been rubbed, possessed the power of attracting light bodies, such as feathers, &c. The person who first contributed essentially to its promotion was Dr. Wm. Gilbert, who published a book of electrical experiments in 1600. We are indebted to Dr. Franklin more than any one else for developing this subject.

"G. W., of Pa."—Mr. W. resided in Cambridgeport, Mass., at the time the communication was made. We have not heard from him since—and do not know that he has ever constructed one of his instruments.

"W. F., of N. Scotia."—Such binding as you want will cost $1,50 per volume.

"A. L., of N. Y."—The first 32 numbers of volume 4 cannot be supplied complete.

"G. S., of N. Y."—The model of your churn has been examined. We do not discover any new feature in it. Churns worked by a crank, and having a perforated dasher have long been in use. Several references could be given.

"J. W. S., of Ill."—Excuse the delay, our business is so extensive. We would say, that no such invention for plumbing wheels is in use to our knowledge, and we believe it to be patentable, but first of all try it, before going to any other expense. The old plan of wedging up the wheels and plumbing them by the spirit level alone, has always been held to be the best.

"J. C., of N. Y."—The meaning of melting the composition, and working it in cold water, is to grind in cold water after it is melted and then lay it on. After it is laid on it should be dried in a very hot stove room. If a small quantity of alum is used along with it there is little danger of it crumbling. It is waterproof, but the exact expense we cannot tell.

"M. K., of N. Y."—It would seem from your description that the principle is the same as the syphon; if so it could not be patented. We can tell much better by having an opportunity of examining a drawing or a model. $2 received.

"D. P. C., of N. C."—The price of the book you ordered is $2,50. It cannot be sent by mail unless you authorize us to take the covers off. Can it not be forwarded by express so as to save the covers. Please answer by return of mail.

"S. N. B., of Ohio."—Thomas Blanchard resides in Boston, Mass., by writing to him you can without doubt obtain all the information you require in regard to his wood bending machine.

"G. L. C. D., of Miss."—The invention you refer to is an English invention, and has not been introduced into this country. If any one has a good machine for covering wire and will let us know by letter post-paid we will inform you.

"J. H. C. of Pa."—If you can wait, we intend to treat the subject fully in our next volume.

Answers to Correspondents.

Owing to the great length of our invaluable index, answers to many correspondents is necessarily delayed till next week. Our attention to correspondents will receive a still greater share of our labors than heretofore—*great* though that has been.

Scientific American for Binding.

As this number closes volume 5, we would suggest to those that desire to have their numbers bound to send them to this office and have them executed in our usual manner, for the low price of 75 cents.

You can depend upon having your volumes well bound by sending them to this office, as they will be executed to conform in style with hundreds that we have bound for ourselves and the trade.

Important Notice to us!

Whenever any of our friends order numbers they have missed—we shall always send them, if we have them on hand. We make this statement to save much time and trouble, to which we are subjected in replying, when the numbers called for cannot be supplied.

To Correspondents.

Friends, we return to many of you our sincere thanks for the valuable information we have received from time to time. You have not only done us but "the State some service." Knowledge is truth, and your labor to diffuse knowlege has been to advance truth, and every man who does this, is a benefactor to his fellow-man.

To all correspondents who have asked for information, we have endeavored to give it to them in all candor. Many have written unto us, whom we could not answer, the reason in every case being good. Some could not get an answer because of the too great length of their letters, and some, we must say, we could not read, not owing to bad composition apparently, but to carelessness in the writers. Many of our correspondents may have been overlooked unintentionally. We endeavor to be careful in this respect, but when we have so many as 50 letters on an average per day, and some of them very long, it is impossible to prevent oversights. It is our intention, however, to employ a greater force and to labor more attentively for the benefit of our correspondents, than heretofore. We hope you will endeavor to extend the circulation of volume 6, and we will endeavor to return you equal favors.

Patent Claims.

Persons desiring the claims of any invention which has been patented within fourteen years can obtain a copy by addressing a letter to this office; stating the name of the patentee, and the year the patent was granted (adding the month of the year when convenient), and enclosing one dollar as fees for copying.

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PATENT CLAIMS.